UNITED STATES DEPARTMENT OF AGRICULTURE

FOREST SERVICE

MONTHLY REPORT OF THE OFFICES OF FOREST EXPERIMENT STATIONS AND DENDROLOGY

GOVERNMENT PRINTING OFFICE

4—5156

RS
Reports
Monthly

MONTHLY REPORT

OFFICES OF FOREST EXPERIMENT STATIONS AND DENDROLOGY

April, 1925

Foreword

Administration of Experiment Station Work by Projects

By E. W. Allen

Experiment station work, like any serious enterprise, requires organization, administration and business management. After perfecting its organization, bringing together a staff and securing opportunity for its members to work under advantageous and stimulating conditions, the most important features of station administration center in its work. This includes, of course, its planning, supervision and publication, and the handling of the funds to meet its needs economically.

The use of station funds finds its justification not merely in the maintenance of laboratories, or model stables, of well-cared for fields, but in productive experiment and research. The work determines the disposition of the funds. Hence it is a function of the director to know what the various men of his staff are doing or proposing to do, and to direct their energies into profitable avenues.

None of our stations are large enough to attack all of the agricultural problems of their localities simultaneously. A selection has to be made, with a view to the needs of science and of agriculture in that locality. Some things are relatively more important and pressing than others. Some demand immediate attention while others can wait. The determination of the things to be undertaken, the consideration of the money required, and the fitting of these efforts into a broad general plan is the responsible and discriminating duty of the director.

When our stations were smaller and their work of simpler nature the details of station administration could be carried under the director's hat, and there were less things to distract him from his special charge. Now, however, there is need of more formal and systematic arrangements. System and organization are necessary to enable him to maintain a contact and familiarity with the station's business necessary to its efficient administration.

The activity of an experiment station is made up of a variety of separate undertakings - its lines of work, or, more specifically, its projects. Formerly the line of work was the unit, and these lines were grouped together for administrative purposes into departments. But as time has gone on the problems have narrowed down, and the purpose and plan have become more clearly defined. Lines of work have been split up into projects, and departments have often been divided into specialties. This segregation and definition is an important step in the organization of the work, and rightly managed is a great administrative help. It serves to individualize the various activities and furnishes a catalogue of them which tells the whole story at a glance.

Individual projects may be limited to a single department, or they may require the combined attention of two or more departments. But because the project stands for a definite effort it has been found a convenient unit in planning, financing and supervising station work. To be effective, the project must be clearly defined and definite, or it is no advantage over the broader line of work. A project is not a desultory, rambling, vacillating effort, but it has a clear purpose, is restricted in scope, and systematic in its plan. It is designed to be constructive, and to advance on the basis of what is already known. It is not undertaken because "everybody's doing it," and it is not to be regarded as an endurance test, as some have seemed to think. It is developed out of a knowledge of what others have found, in fact and in technique, and a study of the best means of attack. It should be scientifically sound and technically fit, no matter how simple, and it should justify itself at the outset by giving reasonable promise of success. It is not an inflexible series of cut-and-dried plans, but it is the best that can be devised at the time, and it is subject to modification or amendment as new light is gained.

The purpose, scope and plan of a new project may be explained by talking the matter over, but this is not satisfactory, as it gives no basis for proper study and no record of the understanding. It is far easier and safer to consider such matters in written form than verbally, and it is highly important that new work should receive formal consideration as to its merits, its desirability, and the feasibility of entering upon it. This may involve calling in assistance. It is better to have criticism in advance than after the work has been done. If the work is approved the director becomes responsible for it as a feature of the station program.

Many station men seem averse to outlining their proposed work, and maintain that it is impossible to anticipate results or the course which an investigation will take. This is not essential or expected, but it is feared the objection comes most often from those who are not clear in their own minds what they are actually aiming at, or have not thought out their method of attack. There is no desire to burden an investigator unduly, or to tie him to a set of plans or encourage him to anticipate results; but

rather to encourage thorough preparation, which will give confidence at the outset and avoid unnecessary mistakes or waste due to thoughtless oversight. The suggestion of a new project presupposes sufficient study to state the problem clearly and to construct a plan and a general method of attack. How else can a director know what he is being asked to approve, or judge as to the merits of the undertaking or what it will ultimately involve?

It is entirely feasible, also, to elaborate a project so as to show its requirements in the way of land, teams and labor, special facilities or additional assistance, cooperation with other branches of the station, etc. It is the part of good administration to have these matters considered in advance, so that adequate provision may be made. These things will furnish a basis for estimating the amount of funds which should be assigned or set aside for its legitimate needs. If this is not done the project may suffer before the year is over. This danger is not merely a theoretical one.

Station projects vary much in grade. What is said is not intended to apply merely to the research activities; it applies equally to the ordinary experiments. We have become accustomed to outlining the more intricate and technical undertakings, but the project plan has not generally been extended to all features of the work. Unfortunately the plans of very many of the simpler experiments have never been reduced to writing. There is quite as much need for it, however, as in the case of the more elaborate investigation, for these experiments are relatively expensive, they often follow conventional methods without query as to their suitability, and once started they are apt to run on indefinitely. If station work is to be really progressive it must give more consideration to the ordinary experiments and their methods, to determine their profitability and their fitness to yield results which can be given a scientific interpretation. If a thing is worth doing it is worth outlining and describing as a project, giving a place in the record and expecting a report.

The project outline also serves another purpose, that of controlling investigation or preventing its running off unnecessarily into side lines and leaving the main issue to languish. It affords a means of following up the work, and of holding men to the main purpose. There is abundant need for this. Some measure of sympathetic supervision and control is an administrative necessity, and this can be accomplished with the least friction and misunderstanding when the project outline is used as a basis.

(To be continued)

FOREST EXPERIMENT STATIONS

Washington

Station Names Changed

The Forester has approved the change of designation of two more experiment stations in accordance with his policy of getting away from local names which do not indicate the regional character of the station work. All of the stations now have indicative names. The Priest River Station becomes the Northern Rocky Mountain, and the Fremont the Rocky Mountain Station. It is realized that there may be some confusion between these two stations because of the similarity in names, but it is not felt that this will be particularly important.

Details

Weidman left Washington early in the month to return to Missoula. On his way back he visited the Harvard Forest to see an intensively managed forest area. He is now very optimistic of the possibilities in western white pine. Shortly after he had left Forbes arrived for a two months' detail to become better acquainted with station work.

Journal of Agricultural Research

A number of articles are still awaiting action in the Journal of Agricultural Research. An attempt made to hurry publication of an article submitted last summer, disclosed the fact that because of the crowded condition of their files it would be impossible to reach it until late in the fall. This jam is the result of the attempt to get many articles on the waiting list. Papers will appear hereafter in the order in which they are received, though possible through reassignments of articles, we may be able to secure for some an earlier appearance than others. A change in the editorial policy of the Journal is expected soon and we understand that editorial requirements are going to be the same as for other Departmental publications.

Old Records

In an attempt to clear up our files and to furnish the Stations with all the original data pertaining to their region, a housecleaning has been made of the measurement files. As a result a large amount of old data has been sent to the Stations. It has been a surprise to see the quantity of this material thus brought to light.

Annual Programs

Nearly all the annual programs of the Stations and Districts have been received and the compilation of the combined program of work is under way. An attempt will be made to complete this during May.

New Books

It is believed that the Stations will find two recent publications of considerable interest: One of these is "Statistical Methods" by F. E. Mills, one of the best of its kind. Another is a bulletin of the West Virginia Agricultural Experiment Station on "The Influence of Plot Size and Replication on Experimental Error in Field Trials with Potatoes." Although dealing with an agricultural crop, the methods brought out should be of value in forestation work and other studies. Copies have been sent to the stations.

Forest Measurements

The work on the regional western yellow pine occupied over half of the time of the Section of Forest Measurements. This work is now progressing to a point where it is becoming a mechanical job. The cooperative southern pine growth study took up 25 per cent of the time of the section, most of the work being a check of volume tables, including the working up new tree measurements.

The Committee on Standardization of Growth and Field Measurements sent a general circular to all members and to the experiment stations. Behre has raised some objections to the proposed method and his comments are being sent out for consideration. When the comments on the first section have been received, another section will be sent out.

Mrs. Chapin of the Section, who has been ill for nearly three months, expects to return to work some time during May.

Statistics

The Annual Service Statistical Report for 1924 is now about completed, as is the compilation of the 1924 fire statistics from States without protective organizations.

The Senate Land Committee, of which Senator Standfield is Chairman, has requested information upon grazing on the National Forests. Because of the desire to get detailed data put up into new form, it has been necessary to go back over the records to 1906. The compilation of this data will occupy a considerable portion of Miss Meynes' attention during May.

General

Most of the office has been disturbed this past month by paperhangers. The rooms are now in an excellent condition and the brightness of the walls adds materially to the ease of handling the work.

Arrangements were made with the Weather Bureau to furnish District 7 a daily forecast for the Southern Appalachians for a 2 and 3-day period. The forecast will follow in general the findings of McCarthy of the Appalachian Station. The Weather Bureau will furnish the information every morning to some one in the District office, who will interpret it and notify the supervisors when dangerous conditions or a change from dangerous conditions seems imminent. So far, the results have been very satisfactory, although the fire season is now over.

Our attention has just been called to the printing of Form 547, Yield Study, Even-aged stands. Unfortunately, this has been printed in such poor form that it is of exceedingly doubtful use in the field. An attempt will be made to have this reprinted in more suitable form.

The Monthly Report for March was greatly delayed because it got caught in the mimeographing jam for Forest Protection Week. By a rather curious quirk of fate, too, our copy was sent to be mimeographed the earliest date ever.

Library

In April there were 1113 books and periodicals drawn from the library, and 107 members of the Service and others consulted the library in person. The number of books and articles indexed for the catalogue was 239.

EDITOR'S OFFICE

The Preparation of an Outline--II

The English writer, Arnold Bennett, claims that he has clearly and consecutively in mind before he sits down to write all that he intends to say, and that it is never necessary for him to erase a word. If any scientific writer feels that he has this same gift, and that he can get away with it in full daylight and under the merciless gaze of the Board of Review, the Branch editor, the Chief of Branch, the Forester, Public Relations, and the various editors in the office of the Director of Information of the Department of Agriculture, I will not urge that man to construct an outline of his report before he writes that report. He is not long for this world!

But there is probably no other exception to the rule that a readable, sound, and convincing report must have an outline, and that that outline must be, not a mere synopsis of the report, but a sincere effort to focus and correlate the data at hand BEFORE ANY FORMAL WRITING IS DONE.

As to how to prepare the outline, there is little to be said that has not been said already. If you can state in one sentence, or even in one paragraph, the essence of your report, your outline is already half done. To construct that sentence you will have had to see clearly in your own thought what are the points of major importance in your study, and which are of minor importance. You will already know whether "Methods" deserves the prominence of a separate section early in the report, or whether it is Appendix material, or quite possibly should be omitted altogether as an entity. You will already have determined, of course, which of your data really contribute to your conclusions, and which are merely corroborative; which need to be given in detail, and which in summary only. You will have perceived that quite a quantity of hard-won data are simply to be recorded for Research Files and must be omitted altogether from the formal report. Already you have found, very possibly, that several of your pet theories are not supported by the data in hand in any more than a very circumstantial manner, and must therefore be eliminated from consideration at this time.

The mechanics of preparing an outline will vary, of course, with subject matter, importance of the study, and, most of all, with personal characteristics of thought of the writer. For the average writer who does not approximate the Arnold Bennett method of literary work, I would recommend something like the following method:

1. Get out on paper in the quickest, easiest way at hand (pencil scribbling, personal use of the typewriter, dictating, dictaphone, thought transference, or otherwise) a running synopsis of all you want to say. Where the matter is well in hand, a word will stand for a paragraph; where it is less familiar you will want to outline it fairly precisely as you go along. The main thing is to get it all out, regardless of form.

2. With every significant detail of the report noted down in brief, an opportunity is afforded to study the whole subject again in this form, before attempting to shape it into the"beginning, middle, and end" required in the full-written version. If you are repetitious under different sections of the report, this will show up here. If a minor point is being overemphasized and a major point slighted, this is a good place to discover it. Here is the opportunity to consider the elimination of discussions that do not make a definite contribution to the end in view - bringing the results of your study convincingly before the reader. Here also is the place to "call the roll" on those phases of the subject that your fellow-scientist will expect you to treat in full, and which your concentration on the main feature may cause you to omit.

3. After a merciless scrutiny of your unshaped synopsis, begin shaping it into beginning, middle, and end. Decide what discussions are introductory and fundamental, what are integral and structural, what are paramount and what subordinate, and place them and rank them accordingly. Still keep the synopsis form, the brief notations that tell you what you have intended to say. No matter if another would not understand them; they can be translated into the general idiom when you have them in shape.

Some one has said that clear thinking consists in "putting headings for headings and subheadings for subheadings." True as this may be in every department of life, it is certainly no less true in shaping up a report. In this shaping process, with your material still in the rough, the opportunity to sift down your own thinking into a proper and reasonable correlation is one that should be grasped greedily. As you are relentless with yourself here, so will your critics and editors be lenient with you later on. Nothing is justified because you have thought it or said it; it is only justified as it contributes justly to an honest piece of scientific work.

DENDROLOGY

The Revised Check List.--In commenting further on the present status of the new Check List, it seems wise now to say only that it is hoped the List will be printed either in the near or distant future. This may mean a few weeks, several months, or even a year. "Hope springs eternal." The manuscript, thoroughly edited, and marked for the various styles of type to be used, has gone over to the Department ready for the Printer. But before it can actually reach him it must run the gauntlet of criticism by any expert of the various Bureaus interested in taking a "shot" at it.

Forest Trees of the Rockies.--The manuscript of the fifth part of this series of publications has just been completed under the title "Walnuts, Cottonwoods, and Willow Trees of the Rocky Mountain Region." Four parts dealing with all of the conifers of that region already have been published. A few new plates and distribution maps are still to be completed.

"The Beech, Chestnuts, and Oaks of the Southern States" is the title of a new bulletin, on which work has been begun. The original intention was to complete an account of Rocky Mountain trees before taking up the eastern trees. There is, however, great popular need of publications dealing with large and important groups of southern forest trees and the first part of this series is now under way. Other important groups will be taken up in succession.

Chinese Chestnuts.--Practically none of the seedlings raised from the seed so far received of Chinese Castanea, Castanopsis, and Quercus proved to be hardy at Washington, D. C., Asheville, N. C., and Letchworth Park, N.Y., localities within the range of our native Chestnut. While the climatic conditions in the province of Yunnan (from which the seeds came) appear to be comparable with those in Virginia and North Carolina, the complete failure there of these Chinese chestnuts shows that they are too tender to replace the native tree, even though they proved to be immune from bark disease. However, there are still other Chinese chestnuts to be tried, and some of these may prove suitable.

In the meantime stations need to be found in warmer sections of the country for further testing the stock which has failed in the Middle Atlantic and North Atlantic regions. It is unfortunate that the Southern Forest Experiment Station does not at the present time have facilities for such a test. The soil and climatic conditions there probably would be suitable.

The Office of Foreign Seed and Plant Introduction now has on hand some 4,000 potted seedlings of Castanopsis delavayi, a large forest tree from Yunnan that appears to be very promising for our Gulf Region. It is too tender to endure the winter temperature of Washington, D. C. In order to test this and seedlings of some ten other forms of Chinese Castanea, Castanopsis, and Quercus, a shipment will be made for planting at the Wind River Station (Stabler, Washington). The climate there is likely to be mild enough for the stock, since Araucaria imbricata ("Monkey Puzzle") seems to be succeeding there.

Federal Horticultural Board Activities: Foreign Flowering Bulbs Situation:

The Board's Quarantine No. 37, which is a measure for regulating and safeguarding the entrance to this country of foreign-grown plant material, including many different sorts of flowering bulbs, is now receiving a concentrated attack from trades people, amateur plant fanciers, and garden clubs throughout the country. The trades people, particularly commission nurserymen(?), are behind the whole movement, which is in reality aimed at abolishing of Quarantine 37. The attack is apparently aimed only at restrictions the quarantine imposes on the introduction of flowering bulbs. These trades people have discovered that by attacking the Board for its curtailment of flowering bulbs it can count on help of the flower-fancying public, which has the greatest interest in these showy forms of plant life. Without properly informing themselves garden clubs of the country have been generally sold to this pernicious attack, and are helping to deliver it. Throughout, the attack ignores the actual facts underlying the quarantine, for the most part purposely misrepresents them.

At the present time entrance of all sorts of tulip bulbs, crocuses, lily of the valley, etc., are not embargoed, and probably never will be, because they carry no pests or diseases. In January, 1926, the entrance of Narcissus bulbs will be shut off, because they carry dangerous pests. In the meantime, for the past three or four years, millions of these bulbs have been freely admitted, ostensibly for the purpose of enabling propagators here of establishing a home supply. Legitimate plant producers have accordingly used their large importations of Narcissus bulbs for this purpose. The retail and plant commission people have forced their imported bulbs and sold the cut flowers. Now they have no stock and see they will be faced by exclusion in 1926. These are the people who are attacking the Board, and their reasons for doing it are obvious. Through the timely

efforts of legitimate plant producers, there is now established in the United States a bulb industry that will fully meet the needs of the country.

Narcissus bulbs carry insect pests, among them the eel worms, which are destructive to forage clovers, alfalfa and onions. These pests are not now firmly established in these field crops, and where infestation does exist it can be stamped out, if forcing Narcissus bulbs are excluded.

Even after January, 1926, Narcissus bulbs can be imported for propagation purposes, provided they are given the standard hot-water treatment, which destroys bulb pests, but which prevents the bulbs from producing flowers until the second season. This is where the purely trades people are pinched. They do not want hot-water-treated bulbs, because the latter cannot be immediately forced for cut flowers. In order to stir up for their own ends the garden clubs and other real flower fanciers who grow flowers, the trades people are falsely representing that the supply of Narcissus bulbs is soon to be forever denied, in fact, as they are putting it, all flowering bulbs.

The Board has begun a campaign to give the public all of the facts in this matter.

APPALACHIAN FOREST EXPERIMENT STATION

Prospects for the early construction of the proposed field quarters at Bent Creek have become much brighter, due to the interest of the Office of Forest Entomology and their desire to cooperate in the development of the Bent Creek experimental area. It now seems probable that a small building, to serve as a laboratory and temporarily as quarters for the men at work in this area can be erected during the summer. As a means of selecting the best location for the building a topographic map of part of the lower end of the creek valley was made by McCarthy, assisted by Haasis and Averell. The lay of the land was amply photographed by Haasis, and a satisfactory building site has since been staked out.

The withdrawal of an area of 150 or 200 acres for investigative purposes has been agreed upon by Supervisor Rhoades of the Pisgah National Forest. This area will include several acres of level bottomland in the creek valley, with the adjacent north and south-facing slopes. The bottomland is well situated for nursery and transplant beds, and it is expected that parts of it will ultimately be devoted to an arboretum. It is hoped that the laboratory to be built this summer will be only the beginning of a larger development. As the nursery and other experiments are expanded, other buildings will be needed, along with miscellaneous improvements, such as ample water supply and lighting facilities.

McCarthy, Korstian, and Haasis fought fire at Bent Creek with the Pisgah National Forest force on April 2 and 3. The potentiometer-thermocouple apparatus loaned us by the Pacific Northwest Station was again put into use and a series of temperature records taken by Korstian and Haasis.

Among the visitors to the station during April were Assistant District Forester R. M. Evans; B. H. Paul of the Forest Products Laboratory; and R. A. St. George of the Office of Forest Entomology. Mr. Paul collected and shipped to Madison for testing a number of specimens of yellow poplar wood. Mr. St. George is engaged on a series of experiments at Bent Creek which will be continued during the summer. E. L. Demmon, G. B. Shivery, P. C. Wakeley, and L. N. Reynolds, Jr., of the Southern Station, paid the Station a brief visit on their way to eastern North Carolina and Virginia for field work.

J. L. Averell, formerly with the Southern Station, joined the staff, in April, as field assistant.

Yellow Poplar Seeding Experiments Continued (TS-375)

McCarthy made a one-day trip to Willetts to carry out further experiments in direct seeding of yellow poplar in cooperation with the Champion Fibre Company. A field which had not been cultivated for about two years

was planted with poplar seed in spots. The previous success in getting an establishment of poplar by this method justified this more extensive trial. While germination of seed may be expected, the seedlings suffer severely in exposed situations from frost heaving.

Fire Damage Study (Pf-4)

The fire which occurred in the Bent Creek section of the Pisgah Forest furnished an opportunity for the establishment of some plots in the study of fire damage and in the relation of fire to the germination of poplar seed. McCarthy, assisted by Averell and Budd, established a permanent plot in a second-growth stand of shortleaf pine which had been severely burned, with a control plot in a near-by unburned stand. The purpose of these plots is to observe mortality and recovery and to compare the future growth rates of the two plots. To determine the capacity of yellow poplar seed to withstand fire and restock burned areas, a plot was marked out at a point in the creek bottom which had been burned. The area has a stand of small red maple mixed with enough poplar seed trees to seed the soil abundantly. It is planned to clear the red maple from the burned plot and from a check plot on a similar site which was not burned. A third check plot will be established, without clearing, on the burned area. Arrangements have been made to carry on this experiment cooperatively with the Pisgah National Forest staff, and it is expected that Technical Assistant W. J. Quick, Jr., will be assigned to assist McCarthy in the work.

Tests of Species (Fp-3)

The spring planting and nursery work under the test of species project was completed during the month. Square chain plots of 100 trees each were planted by Korstian, Haasis, and Budd to red spruce, Norway spruce and southern balsam fir on both east and south-facing exposures on the Clingman's Peak planting area adjacent to the Mount Mitchell motor road. The spruce came from the Forest Service nursery at Gladwin, West Virginia, while the southern balsam fir was supplied by State Forester J. S. Holmes of North Carolina. The plantings of the two former years, owing to the mild winter, showed very little winter injury. The Japanese larch and European larch, however, showed considerable injury from the late spring frost. The examination this spring showed the Japanese larch to have a higher survival than the European larch.

Seed of red spruce, white spruce, Japanese red pine, incense cedar, noble fir, and a number of other conifers were sown in the Champion Fibre Company's nursery for the purpose of testing their suitability to this region and especially to cut-over spruce lands.

Damping off and weed control experiments were initiated in this same nursery by Korstian and Haasis. Several different treatments with sulphuric acid, formaldehyde, zinc chloride, and copper stearate were used in accordance with plans provided by Messrs. Hartley and Hahn of the Office of Forest Pathology, Bureau of Plant Industry.

Natural Regeneration of Oaks (Mr-2)

With the help of Field Assistants Averell and Budd, Korstian secured additional information on the question of what actually happened to the acorn crop. Altogether the acorn crop of about 40 trees, chiefly white, black, and chestnut oaks, was studied. The results and conclusions are generally similar to those recorded previously in the March report.

The various lots of oak planted in the Champion Fibre Company's nursery were examined by Korstian. Detailed records were secured on both germination and height of the seedlings. Very significant differences are already evident between the large, medium and small acorns in the test of the influence of size and weight. The larger acorns have given a higher percentage of germination and have produced taller, sturdier and more vigorous seedlings in all four species under observation.

An examination of the areas at Bent Creek which were seed spotted with oak and black walnut revealed a large amount of rodent injury. The avidity of gray squirrels for the black walnuts was so great that even though coated with pine tar all of them were dug up and eaten by the squirrels. A few red oak acorns survived the ravages of the rodents but the seedlings were severely injured by a late spring frost.

Publications

In print

E. H. Frothingham

Present Stand of Chestnut in North Carolina and the Southern Appalachians. North Carolina Geological and Economic Survey, Economic Paper No. 56, "Chestnut and the Chestnut Blight in North Carolina," pp. 11-12, 1925.

C. F. Korstian

Coincidence between the Ranges of Forms of Western Yellow Pine, Bark Beetles and Mistletoe. Science, N.S. 61: 448. April 24, 1925.

LAKE STATES FOREST EXPERIMENT STATION

The report on "Timber Growing and Logging Practice in the Lake States" formerly known as public requirements and desirable practice, was completed by Zon during the month and submitted to Washington for publication.

Associate Forester Sherman spent the latter half of the month in the Lake States where Zon met him at Lansing and accompanied him to Chicago, Milwaukee, and back to St. Paul. He also spent a day at Madison, Wisconsin, where he met with influential State government representatives. It seems likely that the Wisconsin enabling act to permit the Federal Government to acquire National Forests in Wisconsin will be passed. E. W. Tinker was with Mr. Sherman and spent a day at the Experiment Station.

Mitchell attended the Ranger Meeting at Cass Lake where, unfortunately, only a full representation from the Superior Forest could attend, owing to the serious fire situation on the Minnesota and Michigan Forests. Mitchell was impressed with the interest shown by those at the meeting in working plans including their technical phases. The members of the National Forests also expressed a desire to undertake investigations on their own forests with the help of the Forest Experiment Station to work out the answers to questions which are troubling them. A tentative arrangement was worked out by which such investigations can be initiated.

At the meeting of the National Lumber Manufacturers' Association in Chicago, which Zon addressed, he was impressed with the new trend in the attitude of the meeting toward timber growing as brought out by two of the principal speakers. They emphasized the close relationship between the growing of timber and agricultural crops, the large area of farm woodlands in the country on which forestry would be practiced by the farmers who are already in the crop growing game, and hence the obvious conclusion that the timber needs of the country in the future could, and would be supplied largely by the farmers. It might be suggested that such a plan has the advantage not only of providing for our timber supply, but also of diverting public attention from the condition of the cut-over areas in large commercial lumbering operations. There was also strong sentiment expressed as to the desirability of limiting the timber cut as a measure of conservation and possibly also for its effect on prices.

It is expected that the jack pine yield tables will be completed early in May.

A full program for American Forest Week was arranged in the Twin Cities under the direction of the State Forester's office. The Experiment Station contributed to the newspaper publicity and Wackerman and Kittredge each made talks before local luncheon clubs. Two large meetings were addressed by Mr. Sherman, and Mr. Tinker also gave two talks while he was in the cities.

The end of the month, Mitchell visited Cass Lake, Cloquet, and Ely, to attend to the installation of hygrographs at those points, and also to work out in more details, plans for investigations on the two National Forests in which the Experiment Station could help.

DISTRICT 5 - CALIFORNIA DISTRICT

Show returned to the District from his long Washington detail early in April and was obliged to spend considerable time in catching up with work which had accumulated during his absence. Preparation of plans for field work for the ensuing season also required a considerable amount of time.

During the month the minimum requirements and desirable practice report for the redwood region was again revised and is now being typed for, we hope, the last time. Show gave one lecture at the University of California Forest School on the forest research work and also gave one talk during American Forest Week.

Dunning's time during the month was occupied principally in completing the report on the second remeasurement of the Massack permanent sample plots and in completing the new volume tables for sugar pine, utilizing the data collected last summer.

With the arrival of the second edition of the Role of Fire, a good deal of time has been spent by Miss Vinther in distributing the publication. This job is not yet completed and probably will not be for at least another month.

The Feather River Experiment Station plant comes back to the jurisdiction of the Forest Service on July 1 and tentative arrangements have been made to assign a ranger to the station, primarily to act as caretaker, until such time as it is needed for research work.

ROCKY MOUNTAIN FOREST EXPERIMENT STATION

Colonel Greeley has approved a change in name to "Rocky Mountain Forest Experiment Station" to correctly designate the broader, regional activities directed from Colorado Springs. The name "Fremont" will, however, be retained to designate the field plant and laboratory of the Branch Station on the slope of Pikes Peak, and to designate projects which are conducted there, on the same plane as Forest projects.

Preparations were begun at the laboratory for an exhaustive test of water requirements, starting this year with 700 one-year seedlings of 7 species. This number will be reduced by sampling, so that at the end of about 4 years there will be about 40 seedlings of each species. Four different soils are being used in order to determine what effect growth vigor has upon water use, absolute and relative to growth rate. It has been necessary to pot the larger part of the trees in available cans holding 10-12 trees. This is perhaps as well, since some of the seedlings are extremely small, and their individual water use would scarcely be measurable. As the growth record of the individual trees begins at this stage, each tree is weighed and photographed to show development of roots and top, before potting.

Roeser's popular article on tree-breeding experiments was finished early in the month and is being reviewed by Bates at odd times.

The drought and fire situation grew still worse during April, with a precipitation during April of only 0.82 inch as compared with a normal of 2.81 inches. This is the eleventh consecutive month with precipitation below normal, the total deficit now being 55 per cent of the normal fall for these months. Although the situation has become so serious, it has its compensation in the opportunity afforded to observe life-and-death struggles which have not been in evidence for many years. Western yellow pine badly affected by mistletoe has died in considerable numbers, and this thinning will probably put a check on the increase in mistletoe which has been evident for 4 or 5 years. Likewise, bearberry (Arctostaphylos) which tends to occupy grassland to the exclusion of all else, appears to be dying out, and this will probably mean the initiation of a new herbaceous type in which there will be more grass for Sam, the faithful general-utility animal.

May will, for Bates, be divided about equally between field and office, the former to complete the preparations for the transpiration study, and to utilize the opportunity for special observations on drought effects. In the office the manuscript for the growth study is still incomplete, while it is also necessary to prepare at least two papers for the meeting of the A.A.A.S. at Portland, to be attended in June.

Roeser will transplant the available lodgepole pine breeding stock. All field planting in these projects is being deferred until next year because of the probability of complete loss in the field.

NORTHEASTERN FOREST EXPERIMENT STATION

Office work on all of the Station's major projects progressed steadily during the month. The most interesting development was in connection with the spruce yield study. We had previously been proceeding on the assumption that in any group of plots in the same age class the average basal area determined by averaging the basal areas of the average tree for each plot should check with the average total basal area for all of the plots divided by the average number of trees for the plots. Meyer has shown both practically and mathematically that this is not the case. The difficulty evidently comes in attempting to use the average of averages. The remedy lies in not attempting to get the average basal area for each age class by averaging the average basal area for each plot, but to determine it from the average number of trees and average total basal area for the age class. It is then possible to fit the resulting curves to each other and to their own material absolutely. This same difficulty is not confined to average basal areas, but applies to all other factors where an average of an average is used.

Fail places were filled in the plantation established on the Agricultural College Forest at Mount Toby last year to compare Scotch, red, and white pine, and Scotch pine stock produced from seed from different sources. The heaviest mortality took place in the Scotch pine, which was 2-0 stock, while the other pines and the Norway spruce used for inter-planting were 2-1 stock. The highest survival was in the white pine, but the red pine averaged on the whole the best looking of the four species. The Norway spruce came through remarkably well, considering that the site is a very sandy flat and that last season was an unusually dry one.

Behre spoke before the Thursday Club of Holyoke and South Hadley early in the month, and Dana spoke over the radio from the Springfield Station during American Forest Week. Through the cooperation of Professor Grose and the Forest Products Laboratory, the moving picture, "A Forest Axiom," was shown four times during this week at Amherst and Northampton.

SOUTHWESTERN FOREST EXPERIMENT STATION

Pearson returned April 10 from a 3-months detail in Albuquerque. The balance of April has been devoted to field examinations of sheep damage, including trips on the Coconino, Tusayan and Sitgreaves with Pooler and Marsh, preparatory to the field examinations in May with Col. Greeley and the Arizona stockmen. A heavy rain and snow April 21 terminated the field work temporarily. Incidentally, the moisture was a great benefit to the forest and range.

Hygro-thermographs have been installed on the Coconino and Gila National Forests. Up to the 20th of April it looked very much like an early fire season, but the rain and snow has put the season off by at least two weeks.

Mr. A. D. Follweiler, a senior forest student from Penn. State arrived the middle of April for a 4 to 6 weeks stay in order to familiarize himself with the station work. He has taken part in growth and thinning studies, and will probably also spend a week with Krauch on sample plot work. Krauch is preparing to leave early in May for the Lincoln where he will spend about 6 weeks establishing new sample plots in Douglas fir.

Pearson addressed the Rotary Club and the Hiram Club in Flagstaff during American Forest Week. Emphasis was placed on the productive capacity of the forest and possible economic returns to the Flagstaff community through the practice of forestry.

SOUTHERN FOREST EXPERIMENT STATION

General

The technical men and field assistants, with the exception of the Director and Hine, devoted practically all of their time during the month to field work. Forbes left on the 15th for a two months' detail in the Washington office.

A staff meeting of all technical members, with the exception of Wyman, was held on the 13th. The chief topic under discussion was the work on the extensive surveys, on which project several of the men have been kept busy.

Hine spent a day in the Washington office on his return from several days' annual leave in the North.

Forbes and Hadley contributed to American Forest Week, the former writing one and the latter three articles.

The Director of the Appalachian Forest Experiment Station allowed Student Assistant Averell, whom he was able to employ when Averell's term with us expired, to spend the first two weeks of the month with Student Assistant Reynolds making extensive surveys, mainly in fire damage, in North Carolina.

Demmon, Shivery, Wakeley, and Reynolds spent the last day of the month in the office of the Appalachian Forest Experiment Station, obtaining information on suitable loblolly areas for the extensive surveys.

Wyman attended the annual meeting of the Florida Forestry Association and was elected a member of the Executive Committee.

R. A. St. George of the Bureau of Entomology and Dr. Austin Cary visited at New Orleans and Bogalusa. We arranged an itinerary for B. H. Paul of the Madison Laboratory, who was seeking second-growth Southern pine on selected sites. Mr. E. M. Nix, Development Agent for the S. A. L. Railway, called on Wyman at Starke.

Protection

Fire. Hine spent a day at Lane, S. C., on the "light burning" plots recently burned for us by the Carolina Fiber Company, and completed his report on the "Establishment of Studies in Fire Damage to Loblolly Pine at Urania, Louisiana."

Management

Two crews, consisting of from three to four men, worked two and three weeks each on the extensive surveys. One crew worked in North Carolina, mostly on fire damage and another in east Texas and Alabama.

The lands of the Kaul Lumber Company in Alabama, logged according to Forest Service specifications and recommendations about 1903-07, were reexamined. Unburned areas show a splendid stand of 1924 longleaf seedlings. The company and the State Forester's office cooperated very fully.

Shivery and Wakeley found reproduction from the scanty 1924 seed crop on the 200-acre method-of-cutting tract at Bogalusa to be practically nil.

Hine completed his two reports on "The Establishment of Permanent Yield Plots in Loblolly Pine."

Naval Stores

Wyman and Byrne did the usual chipping, dipping, and weighing on the Johns, Powell, Sampson Lake, and Cary tracts. At Powell's (longleaf pine) it was found that five streaks failed to open up the ducts in the narrow streaks test, despite the fact that the first streak was put on with a large hack; the yield was very low. Wide chipping also dropped off and the medium stood best. Shallow chipping showed a remarkable yield increase, while deep chipping fell off badly. The dense stand showed up poorly in comparison with the open.

Chipping at Sampson Lake (slash pine) showed low faces with narrow streaks very poor, chipping being still in lightwood. Pulling faces (wide streaks) showed up well and shallow faces made a big gain. Deep chipping, as in longleaf, fell off badly.

Wyman and Byrne installed the necessary equipment, and began the experiments correlating soil temperature and moisture with yield.

Forestation

Demmon, Shivery, and Wakeley spent about a week at the Bogalusa-McNeill Branch Station, and materially aided Hadley with his nursery and planting work.

Hadley has been keeping in touch with our collaborator, Miss Koch, and reports very good progress on the germination tests.

Protection, Other

Demmon and Shivery assisted Hadley in counting the seedlings on the burned and unburned quadrats at McNeill, to determine the relative damage done by fire. The work on the unburned area was at times very slow due to the density of grass.

PACIFIC NORTHWEST FOREST EXPERIMENT STATION

April has been a month of active field work for all members of this organization. Isaac and Simson have been at Wind River all of the month, and Munger was there for nearly a week at two different times. McArdle has been out with the yield study crews all but a few days.

On the Douglas fir yield study there are two crews in the field. The plan is to have McArdle go ahead to look out new working areas in advance of the sample plot crews. In this way each crew has a definite itinerary and knows where to go, where to camp, where to obtain accommodations, and about how long to be in each place. This insures proper selection of working areas with little lost motion. McArdle returns frequently to confer with the crew chiefs and to check up the work. Both outfits are now in northern Washington. During April measurements of 109 sample plots comprising 71¾ acres were obtained in 10 tracts, and 2½ miles of empirical strip cruise were run to later be used in density of stocking comparisons.

Simson's time was chiefly devoted to improvement and maintenance at Wind River. The battery house was wired and the storage batteries placed in commission. Extensive changes were made in the wiring of the quadruple register and some repairs made on the electric light plant. The duff hygrometers were placed in the weather shelter with two hygrographs and checked thrice daily with the sling psychrometer. Their response to changes in relative humidity was rapid.

Meteorologically the month has been a varied one at Wind River. Temperature as high as 80° F, then 1½ inches of snow, thunderstorms, rainbows galore, some freezes that threatened damage to the seed beds, and finally a day with relative humidity of 13 per cent!

Isaac with five men spent much time installing a series of spacing tests by planting on a twice burned piece of logged-off land about 20,000 trees (on 15 acres). The planting included 4x4, 5x5, 6x6, 8x8, 10x10, and a little 12x12 spacing, all of which was carefully staked. The first and second year after planting fail spaces will be filled. The area should give definite information in regard to growth, quality and development of Douglas fir at different densities.

A start was made on the phase of the Douglas fir reproduction study which covers seed storage in the forest floor and germination and survival of Douglas fir seed on the virgin forest floor.

Three men were employed in the maintenance of the Douglas fir seed study plantation, pulling up volunteer reproduction, and chopping down competing hardwoods and brush.

Much work was done in the arboretum to prevent further losses of trees and records and to make the collection more usable. Consignment of seed and trees received from several sources, comprising over 50 species, were planted in nursery beds to be grown for arboretum purposes.

Munger and McArdle collaborated in the preparation of an article entitled "Douglas fir: How it Grows," for the anniversary number of the West Coast Lumberman. Munger gave a talk to the local section of the Society of American Foresters April 24 on "Research in the Northwest."

NORTHERN ROCKY MOUNTAIN FOREST EXPERIMENT STATION

An announcement of particular interest this month is our change of name from Priest River to Northern Rocky Mountain Forest Experiment Station. By approval of the Forester this becomes effective May 1. The length of the new name is a disadvantage, but it is by far the most suitable of the numerous names considered, and the disadvantage in this respect is more than made up by the great need for the change. The name Priest River has always indicated an extremely local application of the work of the experiment station, and this was keenly felt, particularly after the headquarters were moved to Missoula three years ago. Northern Rocky Mountain indicates the regional service of the station and the change is a very welcome one to us.

Weidman returned to Missoula after an absence of more than three months. His work in the Office of Forest Experiment Stations and the association with the men of the Branch gave him a perspective that he probably could not have obtained in any other way. Several of the noteworthy opportunities such a detail affords are to become acquainted with the variety of work of all the stations; to learn how the central viewpoint influences decisions that are not sometimes readily comprehended in the field; to realize how unnecessary some of the letters are that come to this overburdened office from the stations; how unready many of the reports are that are submitted for publication, and what a vast amount of drudgery must be gone through putting them in shape - most of which could be avoided at the source. One of the impressions left by the detail is that the Office of Forest Experiment Stations is badly undermanned. To handle properly the amazing amount of work that goes over the desk in that office the present force should be increased by at least one additional man and an additional stenographer-clerk. Weidman's detail was especially interesting in the opportunity he had to sit in on the consideration of the annual investigative programs of

three stations. Next to the benefit gained from association with the Branch men, this privilege of participation in the discussion of several station programs would alone have been worth the detail.

After leaving Washington, Weidman made a short visit to Harvard Forest and the Northeastern Experiment Station, which are but a short distance from each other in Massachusetts. At the station Weidman had some very interesting discussions with Dana and his staff. The day with Professor Fisher at the Harvard Forest was unusually worth while. This demonstration forest has been under intensive management for about 15 years and now shows the results of silvicultural operations that are a most delightful surprise to the forester interested in silviculture and research. Among the many things to be seen are the results of shelterwood, strip and clear cutting with seed trees, thinnings in young stands, and release cuttings in reproduction and sapling stands. And all these cultural operations are on a paying basis. It was not believed that anything like this could be found outside of Europe! Any forester who gets as near to Harvard Forest as New York should by no means pass up a visit to that interesting tract.

Gisborne has been at the Priest River Branch during about three weeks of the month, chiefly calibrating 11 duff hygrometers and taking the early season measurements of fuels. Early in the month he gave a paper before the Northwestern Science Association at Spokane on cycles of monthly and seasonal precipitation for this region, particularly with reference to forest fires.

Wahlenberg's detail of three months to the office ended upon his return to Savenac Nursery April 8. He reports that the severe winter killing, so active throughout this region last winter, killed well down to the root collars practically all the ceanothus brush common on the deforested slopes around the nursery where it was proposed to study the effect of this brush on survival of planted stock. It is believed the winter killing will prevent carrying out this study next summer, as it is necessary to consider the shade value of the tops as well as the competition of the roots in such tests.

The same climatic injury affected much of the nursery stock, especially the 1-2 yellow pine. About 50 per cent of these trees were culled from spring shipments as a result of this injury. Little is known of the proper amount to cull under such circumstances and tests are to be made of the effect of different degrees of this injury on survival. A further test of top pruning has also been started and will be combined with a test of early and late planting. Numerous fertilizer tests will be made this spring.

Yield computation and compilation continued to be Haig's chief occupation throughout April. During the last week of the month he has been checking the various white pine volume tables of the District against actual tree measurements to determine definitely their variation in different localities of the type.

At the Priest River Branch Kempff was occupied with a variety of work. About 1,000 Douglas fir plants received from Savenac Nursery were set out on Jurgen's Flat where we propose to have an arboretum, if other work will ever sufficiently let up to allow undertaking that as a project. With a knowledge of the sites and a tentative plan in mind, we know where certain species should be planted as we get the stock now and then. Another incidental acquisition in this connection, received in March, comprised 100 transplants each of redwood and Port Orford cedar from the Union Lumber Company nursery at Fort Bragg, California. The stock was obtained gratis through the courtesy of D. T. Mason.

Our model plantation of about 10 acres, located beside the county road, also suffered heavily from winter killing. About 60 per cent of the stock in the plantation was injured, although not all the plants were killed outright. Kempff examined and staked 100 plants showing varying degrees of winter injury and will make periodic observations of the later behavior of these trees.

The station contributed its share to the observance of American Forest Week. Haig gave six lantern slide talks at the Missoula schools which was part of the program at the schools participated in by several members of the Forest Service in Missoula. Kempff gave several talks in the vicinity of Priest River, in addition to spending a day planting 50 trees and giving instruction therein at five Spokane schools. The school program in Spokane, which Kempff took part in, was put on by the Office of Public Relations in conjunction with the Hoo-Hoo organization.

MANUSCRIPT NEWS NOTES

Southwestern

Forest Types and Climate in the Southwest. G. A. Pearson (Dept. Bul.)

Northern Rocky Mountain

Reproduction after fires in Northern Idaho. J. A. Larsen (resubmitted to J.A.R.)

Factors affecting reproduction of Engelmann spruce. W. C. Lowdermilk (resubmitted to J.A.R.)

Rocky Mountain

The Rocky Mountain Forest Experiment Station, with Descriptions of the Principal Evergreen Trees of the Region. (Dept. Leaflet).

District 5

Weather Conditions and Forest Fires. Show and Kotok. (From J. A. R. to Dept. Circular.)

District 6

Germination and Survival of Natural Reproduction on Cut-over Areas in Western Washington. E. J. Hanzlik. (Jour. of Forestry).

Pacific Northwest

Douglas Fir: How it Grows. Munger and McArdle. (West Coast Lumberman).

Washington

Research Manual - Gally Proof.

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Wahlenberg, W. G. Sowing and Planting Season for Western Yellow Pine (Jour. Agr. Res. Feb., 1925),

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